



EFFECTIVENESS OF TOUCH MATH METHOD IN PROMOTING NUMERACY SKILLS IN CHILDREN HAVING DIFFICULTY IN NUMBERS

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ABSTRACT

Touch Math is touching concept this approach is “multi sensory” approach to teaching basic knowledge mathematics using visual, auditory and tactile students “touch point” components. The image of numbers and the positions of the dots are memorized. In this context, the current study was undertaken to investigate the effectiveness of touch math method in teaching numbers 1 to 10 in children having difficulty in numbers. Six children having difficulty in numbers, in the age group 4 to 5 years, and having been inducted into formal early childhood special education for more than a term of 6 months were selected for the study. The children had been formally introduced to numbers one to ten in class, following which the group was randomly assigned to two experimental groups of three children each. The findings of the investigation reiterate the unquestionable facts that touch math method is the most appropriate way for instruction of young children, especially those with difficulty with numbers.

KEYWORDS: Touch Math Method, Numeracy Skill, Preschool.

INTRODUCTION:

Academic performance is a term used for students that reflects how they are doing in their studies and classes. Preschool is an important time of child development, both academically and socially. In general, the term poor academic performance is a familiar phenomena and a common academic problem of students. Mathematics relates to everything in this universe from the smallest to the largest. A positive attitude toward mathematics and a strong foundation for mathematics learning begin in early childhood. Improving mathematics learning is of great concern to educators, because early teaching experiences affect later education outcomes. Research-based improvement of performance in mathematics is likely to pay off with increased achievement, literacy and work skills of children in these critical areas.

Touch Math is touching concept this approach is “multi sensory” approach to teaching basic knowledge mathematics using visual, auditory and tactile students “touch point” components. The image of numbers and the positions of the dots are memorized. Each number for 1 through 9 has touch points corresponding to the digits quantity: Numerals 1 through 5 use single Touch points or dots. Numerals 6 through 9 use double touch points symbolized by a dot inside of a circle. Students touch single Touch points once and double touch points twice each while counting aloud. Providing a multi-sensory program for reading has been shown to be effective in improving the skills of non-readers who need a strong phonemic awareness upon which to build decoding, in the area of reading. A similar need can be found for some students who cannot apply the basic skills of math fact acquisition (Gersten and Chard, 2001).

Learning characteristics suggestive of a disability in mathematics include inversion or omission of numbers, confusion between right and left, a poor sense of direction, and difficulty with computation. In some cases these deficits will continue through adulthood (Geary, 2004). Hands-on experience with concepts at the concrete level, frequent review opportunities, and mediated scaffolding are effective procedures for use with struggling students (Smith, K., & Geller, 2004). Concrete instruction that is paired with the representational should provide students with the support needed to begin to develop meaningful memorization of math facts. The Touch Math method pairs the concrete and representational components of both numerical recognition and math facts (Bullock, 1989). Baroody, et al. (2009) bring into being that meaningful fact memorization, rather than the simple paired problem-response mode, reduced the amount of time and practice needed to achieve mastery and maintain efficiency for struggling students.

AIM:

The current study was undertaken to investigate the comparative effectiveness of touch math method against traditional paper-pencil exercises in stabilising learning of numbers 1 to 9 in children with having difficulty in numbers.

METHOD:

Participants:

For the purpose of experiment, the study included six young learners having difficulty in numbers in the age range of 4 to 5 years. The participant children included 3 boys and 3 girls. All the children were having difficulty in numbers and had been exposed to formal preschool training for a period of more than 6 months (i.e., one academic term), with Hindi as the medium of instruction. Fol-

lowing pre-test of baseline abilities in number skills children were randomly assigned to two experimental groups, one exposed to fortification exercises in the traditional paper-pencil format and another using touch math method. By deriving information from their clinical reports of psychological, listening, speech and language development it was also ensured that the participant-children in both the groups had comparable levels in cognitive and communication skills; thus resulting in stratified random sampling of the participants.

MATERIALS:

Each number from 1 through 9 has touch points corresponding to the digit's quantity: Numerals 1 through 5 use single touch points, or dots. Numerals 6 through 9 use double touch points, symbolized by a dot inside of a circle. Students touch single touch points once and double touch points twice, each while counting aloud. By touching the touch points and counting aloud, the teacher engages the visual learner, the auditory learner and the kinesthetic learner. In touch point computations, students always touch the numbers in the touching/counting pattern specified for a particular numeral.

Procedure:

The study was carried out in five distinct steps – the first step involved adaptation and/or development of touch math materials for training and testing which were validated by experts, the second phase involved formal instruction in numbers 1 to 9 to eight children with difficulty in numeracy skills undergoing special early childhood education; the third step involved pre-test in the number skills followed by stratified random constitution of two experimental groups from among the eight subjects; the fourth step involved carrying out fortification exercises for children of the one experimental group through touch math method and for children of the other experimental group through traditional paper-pencil exercises for a duration of one fortnight; and the final five step involved conducting post-test in the number skills which was parallel to the pre-test.

Data Collection & Analysis:

The pre and post-tests were conducted on individual basis. The alternate strengthening training in traditional and touch math method were carried out in small group of three children each. The difference between the post and pre-test performances had been computed to arrive at the gain scores. The gain scores of the children were worked out separately for recall tasks involving numerals or number names and related association, as well as comprehension tasks involving association of value of numbers or number names to appropriate number of dots. The overall gain in performances was also analysed. All analyses were carried out after converting the raw scores into percentage scores for ease of comparison.

RESULTS AND DISCUSSION:

As described herein above, the gain scores of the two experimental groups were compared. To begin with the overall improvement in number skills was compared by computing the average gain in performances. Figure 1 presenting the mean gain scores of the two experimental groups evinces a mean difference of 32% in favour of the touch math method thus underlining its efficacy in promoting learning in young children having difficulty in numbers.

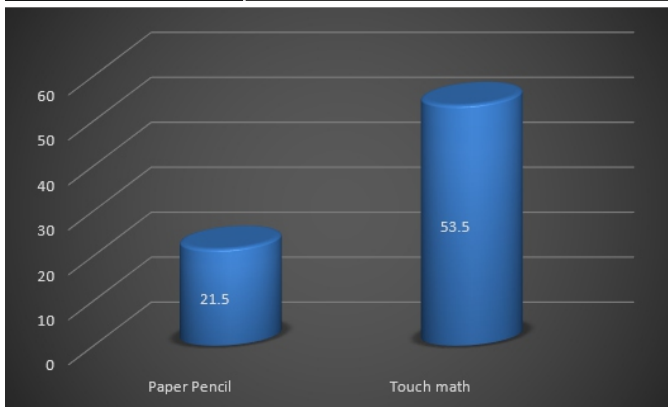


Figure 1: Comparison of overall advancements in number skills between the two groups.

The improvement in the ability to recall numerals and number names was compared between the two groups. The comparison of the mean gain performances have been presented in figure 2. The results indicate that radiant advantage displayed by Touch math method over paper-pencil method grows a shade brighter in the enhancing skills for recalling numerals and number names as is evident in the mean advantage of 30%.

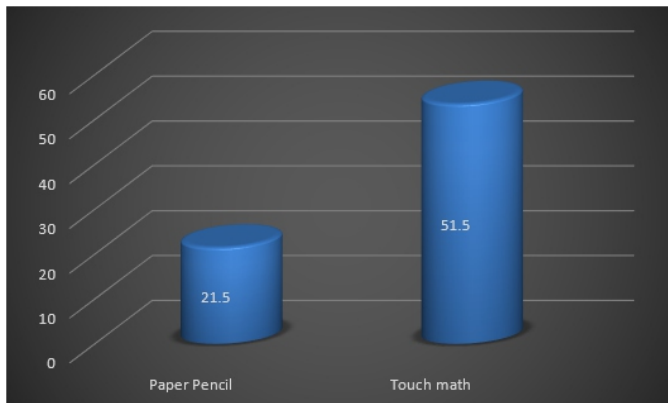


Figure 2: Comparison of recall ability of numerals and number names between the two groups.

CONCLUSION:

In spite of conciseness, the findings of the investigation reiterate the unquestionable facts that touch math method is the most appropriate way for instruction of young children, especially those having difficulty in numbers. Teaching can be made interesting in good teaching method. And students can be made interested in the topic by bringing the required changes. Changes in the teaching process can be made effective. In this, the teacher needs to change the methods and techniques.

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